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BEFORE THE U.S. HOUSE COMMITTEE ON AGRICULTURE
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Mr. Chairman and Members of the Committee, thank you for the invitation to today's

hearing to discuss and agriculture's role in the Renewable Fuels Standard (RFS). The RFS

would increase the production and use of renewable fuels, which would provide important

economic benefits to U.S. agriculture. I would like first to comment briefly on renewable fuel

production today and then summarize the key effects of a future increase in renewable fuel

production on the agricultural economy.

Renewable Fuel Production Today

The major renewable fuel today, and the fuel most affected by the RFS, is ethanol. Ethanol

production has grown from a few million gallons per year in 1979 to a forecast of nearly 4 billion

gallons this year, accounting for about 3 percent of the Nation's gasoline use. During the

2004/05 crop year, 1.325 billion bushels of corn are expected to be used in ethanol production.

For the upcoming 2005/06 crop year, we estimate 1.5 billion bushels of corn will be used in

ethanol, 14 percent of projected U.S. corn production. Corn represents 97 percent of the

feedstock used to make ethanol, sorghum accounts for 2 percent and agricultural wastes, such as

cheese whey, 1 percent.

There are 88 ethanol plants with about 3.9 billion gallons of production capacity per year in

20 States. In addition, 16 plants and 3 major expansions representing over 1 billion gallons of

new capacity are under construction. Plant sizes range from 1 million gallons per year to 300

million gallons per year. Most of the new production capacity added in recent years is farmer-

owned dry mill plants.

Fifty-one percent of the ethanol produced is sold in the Reformulated Gasoline Program, about 9 percent of ethanol is used in the Winter Oxygenated Program, and the rest is sold primarily as an octane enhancer (ethanol has an octane rating of 113).

Despite one recent report that ethanol requires more energy to produce a gallon than the energy contained in a gallon of ethanol, a recent USDA study, using more recent estimates of energy use in corn and ethanol production, found just the opposite: ethanol has a positive net energy balance. The 2004 study estimated that each gallon of ethanol made from corn contains 67 percent more energy than the energy used to make the ethanol. This positive net energy balance is expected to continually improve over time, because corn yields per acre will continue to increase; the corn input industry, such as the fertilizer industry, will become more energy efficient; the ethanol yield per bushel of corn will increase toward its theoretical limit; and, ethanol plants will become more energy efficient.

A small but rapidly growing renewable fuel is biodiesel. Production, at less than 1 million gallons in 1999, rose to about 25 million in 2004. There are 35 active plants producing biodiesel with a production capacity of about 100 million gallons. The majority of biodiesel is made from soybean oil, but some producers use other oilseed crops or recycled oils to make biodiesel.

Because it has similar properties to petroleum diesel fuel, biodiesel can be blended in any ratio with petroleum diesel fuel and is most often blended at the 20 percent level (B20). Today, most B20 is used by government motor fleets, urban bus fleets, and school buses. It is also been used in farm equipment, marine engines, and furnaces as a replacement for heating oil. A market for biodiesel as a lubricity additive is also emerging. Diesel fuel must have good lubricity properties, because the fuel lubricates the diesel engine. There has been an increasing need for

lubricity additives, because diesel fuel lubricity levels have been declining, due to the need to desulfurize diesel fuel to meet tighter air quality standards.

Effects of an RFS

USDA has assessed the effects on the farm economy of a RFS. The House-passed energy bill contains an RFS provision that would require the applicable volume of renewable fuel to increase from 4 billion gallons in 2006 to 5 to billion gallons in 2012. The Senate-passed bill would require the applicable volume of renewable fuel to increase from 4 billion gallons in 2006 to 8 billion gallons in 2012. To conduct our assessment of the RFS, we used our Food and Agriculture Policy Simulator (FAPSIM) econometric model of crop and livestock markets. To illustrate the range of effects of a RFS on agriculture, we examined a RFS that requires 8 billion gallons in 2012. We assumed that all of the expansion in renewable fuels during 2006-2012 would come from the conversion of corn and grain sorghum to ethanol. Currently, there is no operational U.S. commercial cellulosic biomass ethanol plant and very little production is expected prior to 2012. However, a RFS of 8 billion gallons would provide an incentive to invest in cellulosic ethanol production and may accelerate the timeline for commercial production.

Compared with ethanol, biodiesel production is quite small, although growing at a rapid rate. We believe the tax credit provided by the American Jobs Creation Act of 2004 will be the primary factor behind future expansion of biodiesel production in the United States. Beyond 2012, production of biomass ethanol and biodiesel would account for a more significant part of the growth in the renewable fuels consumption.

Our analysis only considers the direct and indirect effects on the farm economy associated with a change in the level of ethanol production from the President's Budget baseline. The

analysis does not consider the impact that changes in ethanol production may have on gasoline prices, changes in Federal tax revenues due to the Federal Fuel Tax Credit, or the economic effects of ethanol displacing domestically refined or imported gasoline.

Under a RFS of 8 billion gallons, demand for corn used for production of ethanol is estimated to increase, on average, by about 685 million bushels during crop years 2006/07-2012/13, compared with commodity baseline projections underlying the FY 2006 President's Budget. The increase in demand for ethanol use increases the price of corn by an average of about 8 percent during 2006/07-2012/13, and by 2012/13, the price of corn is projected to be up about 30 cents per bushel, or 12 percent.

The production of ethanol results in a range of coproducts. For example, coproduct supplies in 2004 ranged from 7 to 8 million tons of Distillers Dried Grains (DDGs); 3 million tons of corn gluten feed; 600,000 tons of corn gluten meal; 400,000 tons of corn oil and an undefined amount of CO_2. We assume that 75 percent of the increase in ethanol production due to the RFS would be through the construction of dry mill plants. As a result, our analysis indicates slightly lower farm prices for soybeans due to increased production of DDGs, which partly substitute for soybean meal. The decline in soybean prices, only 4 cents per bushel on average during 2006/07-2012/13, is limited by higher prices for corn, which cause producers to shift land from the soybean production to corn production. Acreage planted to corn is projected to increase, on average, by 1.5 million acres during 2006/07-2012/13, while area planted to soybean declines, on average, by 1.2 million acres over the same period.

Some have raised concerns over the supply of food and the effects of bringing more land into production to satisfy a large RFS. The shifts in acreage just noted, which are averaged over the projection period, are fairly modest and do not suggest any strain on the Nation's ability to

produce food. The acreage effects are slightly larger when considering the last crop year of the RFS phase-in, 2012/13. By 2012/13, acreage planted to corn is projected to be 3.0 million acres above baseline projections, while acreage planted to soybeans is 2.3 million acres lower. While there is some area shifting among crops, total acreage planted to wheat, rice, corn, sorghum, barley, oats, upland cotton and soybeans in 2012/13 is projected to be 249 million, compared with 248.7 million in the baseline.

Broiler and turkey production are projected to expand due to lower prices for soybean meal, while production of all other livestock declines due to higher prices for corn and other feed grains. The adjustments in livestock prices and production are modest, averaging less than 1 percent during 2006-12.

The effect of a RFS of 8 billion gallons on retail food prices is minor. Our model analysis projects no effect on the Consumer Price Index (CPI) for food until 2009. From 2009-2012, the CPI for food rises from 0.1 percent in 2009 to 0.3 percent in 2012, with most of the increase attributable to small increases in livestock product prices.

Farm cash receipts increase significantly under a RFS of 8 billion gallons due to higher prices for corn, other feed grains and livestock. Over the period of 2006-12, farm cash receipts increase, on average, by $2.2 billion. Net farm income increases, on average, by $1.4 billion, or 2.3 percent, over the period.

Higher corn prices for the 2006/07-2007/08 crops would reduce government payments by nearly $1 billion over those two years. Because the FY 2006 President's Budget baseline projects that corn prices will rebound to levels that do not trigger countercyclical payments or significant marketing loan outlays for crop years 2008/09-2012/13, no savings are forecast for those crop years. However, actual market conditions will likely vary from projections. If prices

are weaker, farm program payments would be higher which could lead to a situation where the RFS would reduce farm program outlays more than estimated in our analysis. If prices are higher than our baseline projections there could be no savings.

The increased demand for ethanol under a RFS of 8 billion gallons increases the value of U.S grain and feed exports and lowers the value of soybeans and soybean product exports. The total value of U.S. agricultural exports increases, on average, from the baseline by $0.3 billion during FY 2006-12.

We used an input-output model to roughly estimate employment generated by the production of 8 billion gallons of ethanol. The increase in ethanol production generates an additional 23,500 jobs in ethanol production, feed grain production, service and manufacturing sectors. However, higher corn prices and increased use of coproducts from the conversion of corn into ethanol reduces employment in other sectors, so the net new jobs created is placed at 8,900.

In conclusion, according to our analysis, a RFS of 8 billion gallons could have a positive effect on the farm economy. While impacts vary by commodity, net farm income would increase. The construction boom in ethanol plants experienced over the past 5 years would continue, generating rural jobs. The Nation's reliance on crude oil and gasoline imports would decline slightly, and its fuel sources would become more diversified. The ethanol production boost provided by the RFS would attract more financial capital into ethanol production that would improve the production and delivery infrastructure and in all likelihood continue the advances in production efficiencies that are reducing ethanol's cost of production.

Mr. Chairman, that completes by statement.

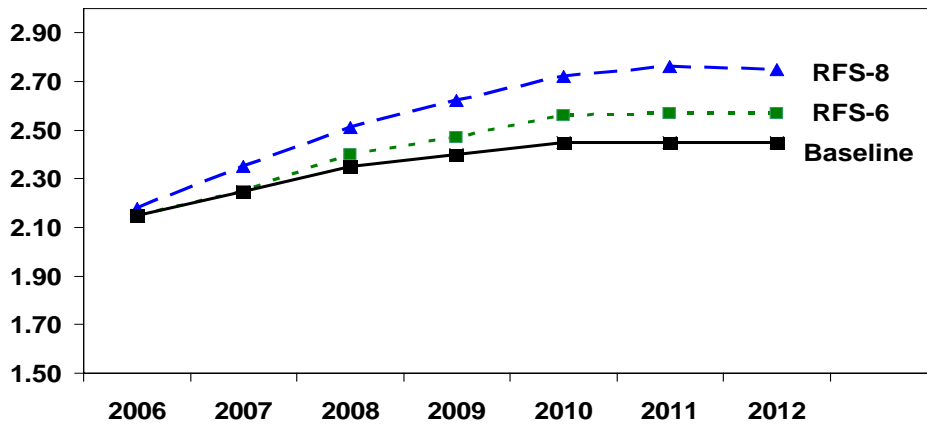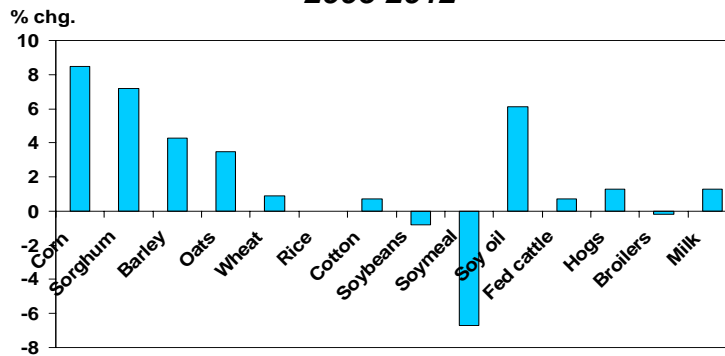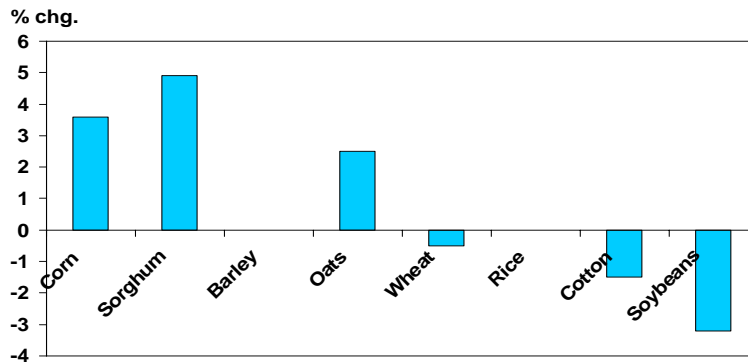# Projected Ethanol Production: RFS—8 Bil. Gal.

Mil. gal.

8 bil. gal. RFS

Baseline

2006 2007 2008 2009 2010 2011 2012
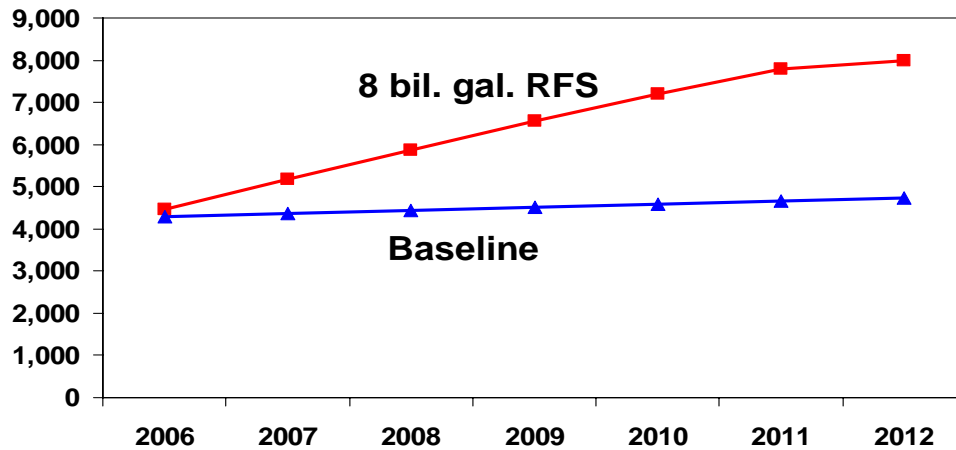
Projected Corn Prices: RFS— 6 & 8 Bil. Gal.

$/bu.

RFS-8

RFS-6

Baseline

2006 2007 2008 2009 2010 2011 2012

Projected Farm Prices: RFS—8 Bil. Gal.
Percentage change from baseline averaged over 2006-2012

% chg.

A bar chart showing percentage change from baseline for: Corn (8.5), Sorghum (7.2), Barley (4.3), Oats (3.4), Wheat (0.9), Rice (0), Cotton (0.7), Soybeans (-0.5), Soymeal (-6.7), Soy oil (6.2), Fed cattle (0.7), Hogs (1.2), Broilers (-0.2), Milk (1.2). Y-axis ranges from -8 to 10.

Projected Planted Area: RFS--8 Bil. Gal.
Percentage change from baseline in 2012/13

% chg.

A bar chart showing percentage change from baseline for: Corn (3.6), Sorghum (4.9), Barley (0), Oats (2.5), Wheat (-0.5), Rice (0), Cotton (-1.5), Soybeans (-3.2). Y-axis ranges from -4 to 6.

Projected U.S. Net Farm Income:
RFS—6 & 8 Bil. Gal.
Percentage Change from Baseline

% chg.

A line chart with two series, RFS 8 bil. gal. and RFS 6 bil. gal., from 2006 to 2012. Y-axis ranges from 0.0 to 3.5.